Superficial temporal artery to posterior cerebral artery bypass

The superficial temporal artery (STA) to proximal posterior cerebral artery (PCA) (P2 segment) bypass is one of the most difficult procedures to perform because the proximal PCA is located deep and high within the ambient cistern. STA to proximal PCA bypass is usually performed through a subtemporal approach or posterior transpetrosal approach, and rarely through a transsylvian approach.

STA to proximal PCA bypass was performed through an anterior temporal approach in three patients with intracranial aneurysm.

The STA was successfully anastomosed to the proximal PCA in all cases. One patient suffered hemiparesis and aphasia due to infarction in the anterior thalamoperforating artery territory.

STA to proximal PCA bypass can be performed through an anterior temporal approach in selected patients. Takeuchi et al. recommend that every precaution, including complete hemostasis, placement of cellulose sponges beneath the recipient artery to elevate the site of the anastomosis, and placement of a continuous drainage tube at the bottom of the operative field to avoid blood contamination during the anastomosis, should be taken to shorten the temporary occlusion time [1)]

Four sides of the formalin-fixed cadaver heads were used to investigate if the posterior cerebral artery could be exposed with this minimum retraction of the temporal lobe in the subtemporal approach and the minimum transpetrosal approach (MTPA). By using the MTPA, 1 patient harboring a ruptured PCA aneurysm underwent superficial temporal artery to posterior cerebral artery bypass followed by isolation of the aneurysm.

The MTPA may be the most favorable approach for PCA bypass that can be performed easily with minimal temporal lobe retraction [2)].

1)
Takeuchi S, Tanikawa R, Tsuboi T, Noda K, Oda J, Miyata S, Ota N, Yoshikane T, Kamiyama H. Superficial temporal artery to proximal posterior cerebral artery bypass through the anterior temporal approach. Surg Neurol Int. 2015 Jun 1;6:95. doi: 10.4103/2152-7806.157949. eCollection 2015. PubMed PMID: 26097774; PubMed Central PMCID: PMC4455125.
2)
Kimura H, Taniguchi M, Koyama J, Fujimoto Y, Hosoda K, Kohmura E. Minimum Transpetrosal Retrolabyrinthine Approach for Revascularization of Posterior Cerebral Artery: Operative Nuance. Neurosurgery. 2015 Oct 16. [Epub ahead of print] PubMed PMID: 26479705.